



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 854,940	05/15/2001	Yu Wang	839-1012	7951

30024 7590 05/21/2003

NIXON & VANDERHIYE P.C./G.E.  
1100 N. GLEBE RD.  
SUITE 800  
ARLINGTON, VA 22201

EXAMINER

PEREZ, GUILLERMO

ART UNIT	PAPER NUMBER
----------	--------------

2834

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/854,940

Applicant(s)

WANG ET AL.

Examiner

Guillermo Perez

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0103 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 14, 2003 has been entered.

### ***Specification***

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the claims recite that the end coil support attaches along a side of the coil end section parallel to a rotor axis. However, the specification recites that the end coil support attaches along a side of the coil end section perpendicular to a rotor axis (page 13 paragraph 48 through page 14, paragraph 50) of the application.

### ***Claim Objections***

Claims 1, 12, and 17 are objected to because of the following informalities: the claims recite that the end coil support attaches along a side of the coil end section parallel to a rotor axis. However, the specification recites that the end coil support attaches along a side of the coil end section perpendicular to a rotor axis (page 13 paragraph 48 through page 14, paragraph 50) of the application. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3-8, 12, 14-17, and 19-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Laskaris et al. (U. S. Pat. 5,548,168).

Referring to claim 1, Laskaris et al. disclose a synchronous machine, a rotor comprising:

a rotor core (14);

a super-conducting coil winding (20) extending around at least a portion of the rotor core (14);

the coil winding (20) having:

- a coil end section adjacent an end of the rotor core (14), and
- an end coil support (66,72) attached to and bracing the end section and being thermally isolated from the rotor core (14); in which
  - the end coil support (66,72) attaches along a side of the coil end section parallel to a rotor axis (figure 4); and
  - the end coil support (66,72) is wider than a width of the coil end section and covers the side of the coil end section (figure 4).

Referring to claims 3 and 19, Laskaris et al. disclose that the end coil support (66,72) includes a pair of plates (72) between which is sandwiched the coil end section.

Referring to claims 4 and 20, Laskaris et al. disclose a cryogenic coupling (84,86) providing cooling fluid to the coil winding (20), in which the end coil support (66,72) is cooled by conduction from the coil winding (20).

Referring to claims 5 and 21, Laskaris et al. disclose a rotor end shaft (34) having a slot (36) to receive the coil end section and end coil support (66,72), and the end shaft (34) is thermally isolated from the end coil support (66).

Referring to claims 6 and 22, Laskaris et al. disclose that the end coil support (66,72) braces an entire length of the coil end section.

Referring to claims 7 and 23, Laskaris et al. disclose that the end coil support (66,72) is transverse to an axis of the rotor core (14).

Referring to claims 8 and 24, Laskaris et al. disclose a second coil end section adjacent a second end of the rotor core, and a second coil support bracing the second end coil end section (figure 1).

Referring to claim 12, Laskaris et al. disclose a method for supporting a superconducting coil winding (20) on a rotor core (14) of a synchronous machine comprising the steps of:

- bracing an end section of the coil winding (20) with an end coil support (66,72) attached to at least one side of the end section parallel to a rotor core axis (figure 4); in which
  - the end coil support (66,72) is wider than the end section of the coil winding (20) and covers the side of the end section (figure 4);

- assembling the coil winding (20), end coil support (66,72) and rotor core (14);
- attaching a rotor end shaft (34) to the rotor core (14);
- thermally isolating the end coil support (66,72) from the rotor core (14) and shaft (34).

Referring to claim 14, Laskaris et al. disclose that the assembling step includes inserting the end section of the coil and the coil support into a slot of the rotor end shaft.

Referring to claim 15, Laskaris et al. disclose that the bracing step includes applying plates on opposite surfaces of the end section, in which the opposite surfaces are parallel to the rotor coil axis.

Referring to claim 16, Laskaris et al. disclose cryogenically cooling the coil, and cooling the end coil support by heat transfer between the coil and the coil support.

Referring to claim 17, Laskaris et al. disclose a rotor (14) for a synchronous machine comprising:

- a rotor core (14) having at least one rotor core end orthogonal to a longitudinal axis of the rotor (figure 3);
- at least one end shaft (34) attached to the rotor core end;
- a race-track super-conducting (SC) coil winding (20) extending around the rotor core (14) and having a coil end section adjacent the rotor end (figure 3);
- a coil support brace (66,72) attached to the coil end section and thermally isolated from the rotor core (14) and rotor end shaft (34), in which

the coil support brace (66,72) is affixed to a surface of the coil end section parallel to the axis of the rotor (14), and

the coil support brace (66,72) is wider than the coil end sections and covers (with the shield/support 22) the end section.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9-11, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laskaris et al. in view of Rios (U. S. Pat. 4,277,705).

Laskaris et al. substantially teaches the claimed invention except that it does not show that the coil support further comprises side supports attached to a long side section of the coil. Laskaris et al. do not disclose that the coil supports further comprises at least one tension rod extending transversely through the rotor core, and coil housings attached to opposite ends of the tension rod, in which the coil housings each attached to an opposite long side section of the coil. Laskaris et al. do not disclose that the tension rod extends through a conduit in the rotor core.

Rios discloses that the coil support further comprises side coil supports (30) attached to a long side section of the coil (16). Rios discloses that the side coil supports (30) further comprises at least one tension rod (32) extending transversely through the rotor core, and coil housings (30) attached to opposite ends of the tension rod (32), in

which the coil housings (30) are each attached to an opposite long side section of the coil (16). Rios discloses that the tension rod (32) extends through a conduit in the rotor core. Rios' embodiments have the purpose of preventing the movement of the windings in the rotor.

It would have been obvious at the time the invention was made to modify the machine of Laskaris et al. and provide it with the support configuration disclosed by Rios for the purpose of preventing the movement of the windings in the rotor.

3. Claims 2, 13, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laskaris et al. in view of Nottingham (U. S. Pat. 4,072,873).

Laskaris et al. substantially teaches the claimed invention except that it does not show that the coil support is a split clamp. Laskaris et al. do not disclose that the end section is braced with a split clamp.

Nottingham discloses that the coil support is a split clamp (25,26). Nottingham discloses that the end section is braced with a split clamp. Nottingham's invention has the purpose of securing the end turns in a highly conductive and mechanically strong union.

It would have been obvious at the time the invention was made to modify the machine and method of Laskaris et al. and provide it with the split clamp disclosed by Nottingham for the purpose of securing the end turns in a highly conductive and mechanically strong union.



***Response to Arguments***

Applicant's arguments filed April 14, 2003 have been fully considered but they are not persuasive.

In response to Applicants remark that the spacers in Laskaris merely prevent the coil from sliding from side to side within the thermal shield, it must be noted that that the spacer plates (72) support ("to hold up" Merriam-Webster's Collegiate Dictionary Tenth Edition) and braces ("A device that holds or fastens two or more parts together or in place" *The American Heritage® Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company. ) the coil.

In response to Applicants remark that Laskaris does not disclose that the plates are not wider than the coil and do not cover the side of the coil and do not cover the coil, it must be noted that Laskaris shows that the end coil support (66,72) is wider than a width of the coil end section (in figure 4), and covers the side of the coil end section (also in figure 4). It must also be noted that the support (66,72) provides its function by means of the shield (22) on which it is attached. The shield can also be considered a support and covers the end coil, as claimed.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "upper and lower wide supports") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to Applicants remark that the spacer plates (72) shown in Laskaris are much thinner than the coil; that the spacer plates only cover a small corner of the coils, and that the Laskaris spacer plates do not cover the coil. It must be noted that the coil support brace (66) in Laskaris is wider (as shown in figure 4) than the coil end sections and covers (with the shield/support 22) the end section, as claimed.

In response to Applicants remark that the plates 72 in Laskaris do not sandwich the end section of the coil, it must be noted that coil 20 is inserted between the plates 72 (sandwiched: "To insert (one thing) tightly between two other things of differing character or quality". *The American Heritage® Dictionary of the English Language, Third Edition* copyright © 1992 by Houghton Mifflin Company. ).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Rios discloses that the combination of the supports with the bolts hold the unit together (column 1, line 65 through column 2, line 1), which is the desired purpose of Laskaris.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-

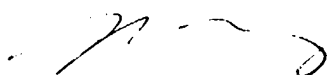
Application/Control Number: 09/854,940  
Art Unit: 2834

Page 10

5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.



Guillermo Perez  
May 13, 2003